

## CLAIMS

What is claimed is:

1. A method comprising:
  - 1 parsing a data processing statement;
  - 2 identifying table field or fields referenced in said data processing statement;
  - 3 for each identified table field, determining whether the table field is a looked-
  - 4 up field;
  - 5 identifying a basis table of which non-looked up ones of said identified table
  - 6 field or fields are members;
  - 7 identifying one or more target tables from which said looked-up one or ones
  - 8 of said identified table field or fields are to be looked up;
  - 9 generating a SQL statement, including with said generated SQL statement
  - 10 field or fields to be selected from said basis table and a FROM clause enumerating
  - 11 said basis table, and if the data processing statement was determined to contain
  - 12 one or more fields to be looked up from one or more target tables, further including
  - 13 among said field or fields to be selected said one or more fields to be looked up
  - 14 from said one or more target tables, and one or more JOIN clauses respectively
  - 15 joining said basis table and said one or more target tables, and one or more
  - 16 corresponding ON clauses respectively specifying one or more corresponding
  - 17 conditions on which rows of said basis and said one or more target tables are to be
  - 18 joined, each of said one or more conditions comprising a corresponding look-up
  - 19 field.
  - 20

2. The method of claim 1, wherein said determining of whether a table field is a looked-up field comprises determining whether the table field is a multi-part table field including at least a first part corresponding to a look-up field, and a second part corresponding to a field to be looked up, concatenated with said first part in a predetermined manner.

3. The method of claim 2, wherein said determining of whether a table field is a looked-up field further comprises upon determining that the table field is a multi-part table field, determining whether the second part is a look-up field, with a third part corresponding to a looked up field concatenated with said second part in a predetermined manner.

4. The method of claim 2, wherein said second part corresponding to a field to be looked up, is concatenated with said first part corresponding to a look-up field, employing one or more predetermined special characters.

5. The method of claim 4, wherein said one or more predetermined special characters comprises at least a selected one of ".", ":", "~", "!", "@", "#", "\$", "%", "^", "&", "\*", "-", "+", "=", "?", "<" and ">".

6. The method of claim 1, wherein said JOIN clause is an OUTER JOIN clause.

7. The method of claim 1, wherein said JOIN clause is an INNER JOIN clause.

8. The method of claim 1, wherein said SQL statement is a selected one of a SELECT, an INSERT, an UPDATE and a DELETE statement.

1 9. A method comprising:

2 presenting a first plurality of fields of a first table for selection for use in a data  
3 processing operation;

4 receiving a selection of a first field that is a member of said first fields;

5 determining whether said selected first field is a first designated look-up field  
6 for looking up first one or more of a second plurality of fields of a second table;

7 presenting said second plurality of fields for selection for use in said data

8 processing operation, if it is determined that that said selected first field is a first

9 designated look-up field for looking up first one or more of said second plurality of

10 fields of said second table.

1 10. The method of claim 9, wherein each of said second plurality of fields is

2 presented in a multi-part form, including a first part, said first look-up field, and a

3 second part, a corresponding one of the second one or more fields to be looked up,

4 concatenated with said first part in a predetermined manner.

1 11. The method of claim 9, wherein said method further comprises

2 receiving a selection of a second field that is a member of said second fields;

3 determining whether said selected second field is a second designated look-

4 up field for looking up second one or more of a third plurality of fields of a third table;

5 and

6 presenting said third plurality of fields for selection if it is determined that said

7 selected second field is a second designated look-up field for looking up second one

8 or more of said third plurality of fields of said third table.

12. The method of claim 11, wherein

each of said second plurality of fields is presented in a multi-part form,  
including a first part, said first look-up field, and a second part, a corresponding one  
of said first one or more fields to be looked up, concatenated with said first part in a  
predetermined manner; and

each of said third plurality of fields is presented in a multi-part form, including  
said first and second parts, and a third part, a corresponding one of said second one  
or more fields to be looked up, concatenated with said second part in a  
predetermined manner.

13. The method of claim 10, wherein said second part, a corresponding one of  
said first one or more fields to be looked up, is concatenated with said first part, said  
first look-up field, employing one or more predetermined special characters.

14. The method of claim 13, wherein said one or more predetermined special  
characters comprises at least a selected one of ".", ":", "~", "!", "@", "#", "\$", "%", "^",  
"&", "\*", "-", "+", "=", "?", "<" and ">".

15. The method of claim 9, wherein the method further comprises generating a  
SQL statement, including with said generated SQL statement field or fields to be  
selected from said first table and a FROM clause enumerating said first table, and if  
one or more of said fields to be looked up from said second table are also selected,  
further including among said field or fields to be selected said one or more fields to  
be looked up from said second table, and a JOIN clause joining said second table to  
said first table, and an ON clause specifying a condition on which rows of said

8 second and said first tables are to be joined, said condition comprising said look-up  
9 field.

1 16. The method of claim 15, wherein said JOIN clause is an OUTER JOIN  
2 clause.

1 17. The method of claim 15, wherein said JOIN clause is an INNER JOIN clause.

1 18. The method of claim 15, wherein said SQL statement is a selected one of a  
2 SELECT, an INSERT, an UPDATE and a DELETE statement.

1 19. The method of claim 9, wherein the method further comprises  
2 specifying said first plurality of fields of said first table; and  
3 designating one or more of said specified first fields as look-up fields; and  
4 specifying target tables for said designated look-up fields.

1 20. An apparatus comprising:  
2 storage medium having stored therein programming instructions, when  
3 executed, operate the apparatus to  
4 parse a data processing statement,  
5 identify table field or fields referenced in said data processing statement,  
6 determine, for each identified table field, whether the table field is a  
7 looked-up field,  
8 identify a basis table of which non-looked up ones of said identified table  
9 field or fields are members,

10 identify one or more target tables from which said looked-up one or ones  
11 of said identified table field or fields are to be looked up, and  
12 generate a SQL statement, including with said generated SQL statement  
13 field or fields to be selected from said basis table and a FROM clause  
14 enumerating said basis table, and if the data processing statement  
15 was determined to contain one or more fields to be looked up from one  
16 or more target tables, further including among said field or fields to be  
17 selected said one or more fields to be looked up from said one or more  
18 target tables, and one or more JOIN clauses respectively joining said  
19 basis table and said one or more target tables, and one or more  
20 corresponding ON clauses respectively specifying one or more  
21 corresponding conditions on which rows of said basis and said one or  
22 more target tables are to be joined, each of said one or more  
23 conditions comprising a corresponding look-up field; and  
24 one or more processors coupled to the storage medium to execute the  
25 programming instructions.

1 21. The apparatus of claim 20, wherein said programming instructions, when  
2 executed, enable the apparatus to determine whether a table field is a looked-up  
3 field by determining whether the table field is a multi-part table field including at least  
4 a first part corresponding to a look-up field, and a second part corresponding to a  
5 field to be looked up, concatenated with said first part in a predetermined manner.

1 22. The apparatus of claim 21, wherein said programming instructions, when  
2 executed, enable the apparatus to, upon determining that the table field is a multi-  
3 part table field, determine whether the second part is also a look-up field, with a third

4 part corresponding to a looked up field concatenated with said second part in a  
5 predetermined manner.

1 23. The apparatus of claim 22, wherein said second part corresponding to a field  
2 to be looked up, is concatenated with said first part corresponding to a look-up field,  
3 employing one or more predetermined special characters.

1 24. The apparatus of claim 23, wherein said one or more predetermined special  
2 characters comprises at least a selected one of ".", ":", "~", "!", "@", "#", "\$", "%", "^",  
3 "&", "\*", "-", "+", "=", "?", "<" and ">".

1 25. The apparatus of claim 20, wherein said JOIN clause is an OUTER JOIN  
2 clause.

1 26. The apparatus of claim 20, wherein said JOIN clause is an INNER JOIN  
2 clause.

1 27. The apparatus of claim 20, wherein said SQL statement is a selected one of  
2 a SELECT, an INSERT, an UPDATE and a DELETE statement.

1 28. An apparatus comprising:  
2 storage medium having stored therein a plurality of programming instructions,  
3 when executed, operate the apparatus to  
4 present a first plurality of fields of a first table for selection for use in a  
5 data processing operation,  
6 receive a selection of a first field that is a member of said first fields,

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7 determine whether said selected first field is a first designated look-up  
8 field for looking up first one or more of a second plurality of fields of a  
9 second table,  
10 present said second plurality of fields for selection for use in said data  
11 processing operation, if it is determined that that said selected first  
12 field is a first designated look-up field for looking up first one or more  
13 of said second plurality of fields of said second table; and  
14 at least one processor coupled to the storage medium to execute the  
15 programming instructions.

1 29. The apparatus of claim 28, wherein said programming instructions, when  
2 executed, operate the apparatus to present each of said second plurality of fields in  
3 a multi-part form, including a first part, said first look-up field, and a second part, a  
4 corresponding one of said first one or more fields to be looked up, concatenated  
5 with said first part in a predetermined manner.

1 30. The apparatus of claim 29, wherein said programming instructions, when  
2 executed, further operate the apparatus to  
3 receive a selection of a second field that is a member of said second fields;  
4 determine whether said selected second field is a second designated look-up  
5 field for looking up second one or more of a third plurality of fields of a third table;  
6 and  
7 present said third plurality of fields for selection if it is determined that said  
8 selected second field is a second designated look-up field for looking up second one  
9 or more of said third plurality of fields of said third table.



31. The apparatus of claim 30, wherein said programming instructions, when executed, operate the apparatus to present each of said second plurality of fields is presented in a multi-part form, including a first part, said first look-up field, and a second part, a corresponding one of said first one or more fields to be looked up, concatenated with said first part in a predetermined manner; and each of said third plurality of fields is presented in a multi-part form, including said first and second parts, and a third part, a corresponding one of said second one or more fields to be looked up, concatenated with said second part in a predetermined manner.

32. The apparatus of claim 29, wherein said second part, a corresponding one of said first one or more fields to be looked up, is concatenated with said first part, said look-up field, employing one or more predetermined special characters.

33. The apparatus of claim 32, wherein said one or more predetermined special characters comprises at least a selected one of ".", ":", "~", "!", "@", "#", "\$", "%", "^", "&", "\*", "-", "+", "=", "?", "<" and ">".

34. The apparatus of claim 28, wherein the programming instructions further operate the apparatus to generate a SQL statement, including with said generated SQL statement field or fields to be selected from said first table and a FROM clause enumerating said first table, and if one or more of said fields to be looked up from said second table are also selected, further including among said field or fields to be selected said one or more fields to be looked up from said second table, and a JOIN clause joining said second table to said first table, and an ON clause specifying a

8 condition on which rows of said second and said first tables are to be joined, said  
9 condition comprising said look-up field.

1 35. The apparatus of claim 28, wherein said JOIN clause is an OUTER JOIN  
2 clause.

1 36. The apparatus of claim 28, wherein said JOIN clause is an INNER JOIN  
2 clause.

1 37. The apparatus of claim 28, wherein said SQL statement is a selected one of  
2 a SELECT, an INSERT, an UPDATE and a DELETE statement.

1 38. The apparatus of claim 28, wherein the programming instructions, when  
2 executed, further operate the apparatus to  
3 specify said first plurality of fields of said first table,  
4 designate one or more of said specified first fields as look-up fields, and  
5 specify target tables for said designated look-up fields.

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